REMARKS/ARGUMENTS

The Applicants originally submitted Claims 1-20 in the application. In a previous response, the Applicants added Claims 21-22. In the present response, the Applicants have not amended, canceled, or added any claims. Accordingly, Claims 1-22 are currently pending in the application.

I.   Rejection of Claims 1-20 under 35 U.S.C. §103

The Examiner has rejected Claims 1-20 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0108117 to Ketchum, *et al.* (hereinafter "Ketchum") in view of an article entitled, "Fundamentals of and Systems Using Web and MATLAB", second addition, Prentice Hall 2000, pages 186-187 to Kamen, *et al.* (hereinafter "Kamen"). The Applicants respectfully disagree since the cited portions of the cited combination of Ketchum and Kamen, as applied by the Examiner, do not teach or suggest selecting a constellation combination based on gains in channels of a MIMO transmitter as recited in independent Claims 1, 8, and 15.

As established in the response of July 23, 2007, Ketchum teaches that the response of the MIMO channel to be used is estimated and used to precondition the transmitted symbol vector prior to transmission to the receiver system. In the Final Rejection of November 1, 2007, the Examiner recognizes that "In paragraph 55, Ketchum clearly teaches '[t]he coding scheme (constellation combination) to be used is determined by the controls from controller 130, which…determined based on CSI (Channel State Information) received from receiver system.'" The Examiner adds "Further, Ketchum teaches CSI comprises all of the information received at the receiver <u>including gains in the channel</u> (see paragraph 0029 of the Ketchum reference…)" (<u>emphasis added</u>). (*See* Final Rejection of November 1, 2007, page 2.) Thus, the Examiner asserts that the CSI determines the coding

scheme and allows the transmitter to precondition the transmitted symbol vector prior to transmission to the receiver system.

However, the CSI, as the Examiner asserts, includes gains in the communication channel between the transmitter and receiver that are fed back to the transmitter from the receiver. The CSI does not include the gains, or gain settings, of the first and second transmit channels TCH1, TCH2 of the MIMO transmitter as recited in independent Claims 1, 8, and 15. The limitation 'gains in channels of the MIMO transmitter' are the gain settings of the first and second transmit channels TCH1, TCH2. (See, e.g., paragraph [0021] of the original specification). As noted in paragraph [0004] of the original specification, "In communication systems using frequency division duplexing or time division duplexing where the time slots are longer than the channel coherence time, reliable channel information will not be available at the transmitter without some sort of feedback. Unfortunately, feedback systems are often infeasible for communication systems because of the reduction in bit rate typically involved." The system of Ketchum is a system that, as established above and recognized by the Examiner, uses feedback in the form of CSI sent from the receiver to the transmitter. The invention as presently claimed, however, does not rely on this feedback. Instead, it selects a constellation combination on the gains in the channels of the MIMO transmitter, not on the gains of the communication channels as fed back to the transmitter. As such, the invention as presently claimed does not rely on the feedback of Ketchum which can reduce bit rate of the communication.

Therefore, the cited portions of Ketchum do not teach or suggest selecting a constellation combination based on gains in channels of a MIMO transmitter. Kamen has not been cited to cure this deficiency of Ketchum but to teach that convolution in the time domain is equivalent of

multiplication in the frequency domain. (*See* Examiner's Action of October 17, 2008, page 3.) As such, the cited combination of the cited portions of Ketchum and Kamen, as applied by the Examiner, does not establish a *prima facie* case of obviousness of independent Claims 1, 8, and 15 and Claims that depend thereon. Accordingly, the Applicants respectfully request the Examiner to withdraw the §103(a) rejection of Claims 1-20 and allow issuance thereof.

II.   Rejection of Claims 21 and 22 under 35 U.S.C. §102

The Examiner has rejected Claims 21 and 22 under 35 U.S.C. §02(e) as being anticipated by U.S. Patent No. 7,327,795 to Oprea (hereinafter "Oprea"). The Applicants respectfully disagree. More specifically, the Applicants fail to find where Oprea teaches an OFDM MIMO transmitter for transmitting a fixed number of bits at each transmission, comprising an encoding decision subsystem configured to select a constellation combination from a constellation set based on the fixed number of bits.

The Examiner asserts that "Oprea teaches that encoding subsystem selects one of the constellation combination from a constellation set based on a fixed number of bits." The Examiner further asserts that "It is inherent in the art that 16QAM, 64QAM, 128QAM and BPSK all have fixed number of bits in the constellation." (*See* Examiner's Action of October 17, 2008, page 2.) Without addressing whether it is inherent in the art that 16QAM, 64QAM, 128QAM, and BPSK all have a fixed number of bits in the constellation, the Applicants respectfully maintain that the selection of the constellation, be it 16QAM, 64QAM, 128QAM, etc., in Oprea is not based on the fixed number of bits in the constellation as presently claimed. While the constellations in Oprea may have the same number of fixed bits as the Examiner asserts, they are not selected based on the number of

<u>fixed bits</u>. On the contrary, as established in the response of July 10, 2008, Oprea selects the constellations based on <u>the strength of spatial-subspace channel</u>. (*See, e.g.*, page 4 of the response of July 8, 2008.)

As such, the cited portions of Oprea do not teach an OFDM MIMO transmitter for transmitting a fixed number of bits at each transmission, comprising an encoding decision subsystem configured to select a constellation combination from a constellation set based on the fixed number of bits and, therefore, do not anticipate independent Claim 21 and Claims that depend thereon. Accordingly, the Applicants respectfully request that the Examiner withdraw the §102(e) rejection of Claims 21 and 22 and allow issuance thereof.

III.   Conclusion

In view of the foregoing remarks, the Applicants now see all of the Claims currently pending in this application to be in condition for allowance and therefore earnestly solicit a Notice of Allowance for Claims 1-22.

The Applicants request the Examiner to telephone the undersigned agent of record at (972) 480-8800 if such would further or expedite the prosecution of the present application. The Commissioner is hereby authorized to charge any fees, credits or overpayments to Deposit Account 20-0668.

Respectfully submitted,

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